

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,035,633
APPLICATION NO. : 08/990821
DATED : March 14, 2000
INVENTOR(S) : Woodrow Woods

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

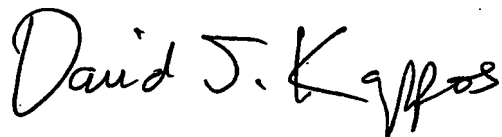
Column 7, Line 62, "elects" should be corrected to -- ejects --.

Column 8, Line 51, "elects" should be corrected to -- ejects --.

Column 10, Line 3, "elects" should be corrected to -- ejects --.

Signed and Sealed this

Eighth Day of September, 2009

A handwritten signature in black ink that reads "David J. Kappos". The signature is written in a cursive, flowing style.

David J. Kappos
Director of the United States Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 6,035,633
APPLICATION NO.: 08/990,821
ISSUE DATE : 03/14/2000
INVENTOR(S) : Woodrow Woods

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 7, Line 62, "elects" should be corrected to - - ejects - - .

Column 8, Line 51, "elects" should be corrected to - - ejects - - .

Column 10, Line 3, "elects" should be corrected to - - ejects - - .

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Mark D. Bowen, Esq. MALIN HALEY DIMAGGIO BOWEN & LHOTA, P.A.
1936 South Andrews Avenue
Fort Lauderdale, Florida 33316

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

August 6, 2009

In re application of : WOODS, Woodrow
Serial No. : 08/990,821
Filed : December 15, 1997
Entitled : WATER JACKETED EXHAUST PIPE
FOR MARINE EXHAUST SYSTEMS
Art Unit : 3745
PATENT NUMBER : 6,035,633
Issue Date : March 14, 2000
Our File No. : 14454.6922

**COMMUNICATION REGARDING
CERTIFICATE OF CORRECTION**

Commissioner for Patents
Office of Patent Publication
Mail Stop – Certificate of Correction Branch
P.O. Box 1450
Alexandria, VA 22313-1450

Attn: Technology Center Director

Dear Sir:

A Certificate of Correction Form PTO/SB/44 is being filed herewith. Patentee hereby requests that a Certificate of Correction issue in connection with the above referenced patent. Correction is required due to Office error pursuant to 35 U.S.C. 254, and the mistake is clearly disclosed in the records of the Office as more fully set forth below. This matter is appropriate for submission to the appropriate Technology Center Director

pursuant to M.P.E.P. 1003(1)(ii), as the patent at issue is in litigation. Copies from the Office records supporting this Request for Correction are attached hereto as Exhibits pursuant to 37 CFR 1.322.

THE OFFICE ERROR

1. U.S. Patent No. 6,035,633 (the “633 Patent”) issued on March 14, 2000. A copy of the ‘633 Patent is attached hereto as Exhibit “A.”

2. The word “elects” erroneously appears in claims 1, 14, and 21 of the ‘633 Patent. More particularly, the word “elects” appears in: (a) claim 1 at column 7, line 62; (b) in claim 14 at col.8, line 51; and (c) in claim 21 at col. 10, line 3.

3. The word “elects” appears due to Office error, and the correct word as clearly evidenced by the records of the Office is “ejects.”

In the Response to April 1, 1999, Office Action filed by Applicant (Date Stamped July 06, 1999) the claims were amended. The word “ejects” was added to the claims along with other language by amendment to then pending claims 1, 11, and 18, which claims were re-numbered as 1, 14, and 21 respectively in the issued ‘633 Patent. A copy of the Response is attached hereto as Exhibit “B.”

The amendments to the claims are clearly seen in the Response. Claim 1 (as amended by Applicant) is presented on pages 1-2 of the Response. Claim 11 (re-numbered as 14) is presented on pages 2-3 of the Response. Claim 18 (re-numbered as 21) is presented on pages 3-4 of the Response.

4. It is believed that the required “underline” designating amended language to be added to the claims partially obscured the amended language thereby leading the Office to erroneously print the word “elects” rather than the correct word “ejects”.

5. Correction is respectfully requested.

Should the Office have any questions, comments, or concerns, the undersigned would appreciate a telephone conference in order to expedite this correction.

Respectfully submitted,

MALIN HALEY DiMAGGIO
BOWEN & LHOTA, P.A.
1936 South Andrews Avenue
Fort Lauderdale, Florida 33316
Tel: 954-763-3303

Attorneys for Patentee

By: /mark d. bowen/
Mark D. Bowen, Esq.
Reg. No.: 39,914

EXHIBIT A

substantially uniform film on surface 200 of outer shell 180 and is dispersed as fine particles by the inwardly tapered inner surface 200 into the central region of the exhaust gas flow 220.

In this second alternate embodiment, inner liner 120 has an end portion which terminates at a point substantially even with the end portion of outer shell 180. As in the first embodiment, the inwardly tapered surface 140 of inner liner 120 clips turbulence and thus inhibits water from traveling backward along inner surface 260 of inner liner 120.

It has been found that the present invention functions optimally when sized to maintain the flow of exhaust gas at approximately 1.5 feet/second (approximately 75-80 miles per hour) relative to the velocity of the water. When operating under such conditions the present invention effectively reduces the exhaust gas temperature from inlet temperatures of approximately 700-1000° F. to approximately 130-140° F., while causing the cooling water, having an inlet temperature of approximately 100-120° F., to vaporize into steam. The present invention is thus sized to maximize the cooling effect by causing substantially all of the cooling water to vaporize and be ejected from the exhaust system as steam vapor.

In use in a marine exhaust system the present embodiment 100 performs as follows. Water is supplied to the present invention, and as shown in FIG. 11 water will enter volume 240 inlet pipe 480. It should be recognized that any structure and/or method of injecting water into volume 240 is within the scope of the invention. Water will flow through volume 240 and exit passageways 280 whereby streams of water are directed toward inner surface 200 of outer liner 180 whereafter droplets of water flow along inner surface 200 while other droplets of water deflect onto the outer surface 270 of inner liner 120 and/or toward region 220. The water and exhaust gas exiting the device then mix in region 220 wherein the water is vaporized thereby causing the exhaust gas to substantially cool.

The instant invention has been shown and described herein in what is considered to be the most practical and preferred embodiment. It is recognized, however, that departures may be made therefrom within the scope of the invention and that obvious modifications will occur to a person skilled in the art.

What is claimed is:

1. A water jacketed exhaust pipe for marine engines comprising:

an elongated inner liner, said liner having a tail end, said tail end defining a first inwardly tapered section;

an elongated outer shell, said shell surrounding said liner about an elongated axis of said pipe, said shell further having a tail end, said shell tail end defining a second inwardly tapered section;

a spacer having a top, wherein said spacer is disposed between said outer shell and said inner liner that separates said shell from said liner and defines an inner volume therebetween, said spacer further defining at least one passageway therethrough communicating said volume with an outer volume outside said exhaust pipe, and wherein said passageway is narrow enough to create a back pressure in said inner volume that thereby forcefully elects water through said passageway.

2. The water jacketed exhaust pipe for marine engines as in claim 1, wherein a portion of water exiting said at least one passageway is deflected onto said inner liner.

3. The water jacketed exhaust pipe for marine engines as in claim 1, wherein said spacer is a ring.

4. The water jacketed exhaust pipe as set forth in claim 1, wherein said inner liner and said outer shell are cylindrical.

5. The water jacketed exhaust pipe as set forth in claim 4, wherein said inner liner and said outer shell are sized to maintain exhaust gas exiting said inner liner at a velocity of approximately 1.5 feet per second relative to water exiting said outer shell.

6. The water jacketed exhaust pipe as set forth in claim 1, wherein said inner liner, said outer shell and said spacer are constructed from a corrosion resistant material.

7. The water jacketed exhaust pipe as set forth in claim 1, wherein said inner liner, said outer shell, and said spacer are constructed of stainless steel.

8. The water jacketed exhaust pipe as set forth in claim 1, wherein said first and second inwardly tapered sections are cone shaped.

9. The water jacketed exhaust pipe as set forth in claim 1, wherein at least one of said first and second inwardly tapered sections is curved.

10. The water jacketed exhaust pipe as set forth in claim 1, wherein at least one of said first and second inwardly tapered sections are angled.

11. A water jacketed exhaust pipe as described in claim 1, wherein said inner liner terminates substantially even with said outer shell.

12. A water jacketed exhaust pipe as described in claim 1, wherein said spacer is angled between said outer shell and said inner liner so that said passageway directs water from said inner volume onto said outer shell.

13. A water jacketed exhaust pipe as described in claim 1 further comprising:

a plurality of said passageways, wherein said passageways are more closely spaced relative to each other toward said top such that as water is ejected through said passageways a uniform volumetric flow of water is provided around said inner liner.

14. A water jacketed exhaust pipe for marine engines comprising:

an elongated inner liner, said liner having a tail end, said tail end defining an inwardly tapered section;

an elongated outer shell, said outer shell having a tail end, said shell surrounding said liner about an elongate axis of said pipe;

a spacer angularly disposed between said outer shell and said inner liner and separating said shell from said liner and defining an inner volume therebetween, said spacer further defining at least one passageway thereby fluidly communicating said inner volume with an outer volume outside said exhaust pipe; and,

wherein said passageway is narrow enough to create a back pressure in said inner volume that thereby forcefully elects water through said passageway, and wherein fluid from said inner volume is directed toward said outer shell by said at least one passageway.

15. The water jacketed exhaust pipe for marine engines as in claim 14, wherein said spacer is a ring.

16. The water jacketed exhaust pipe as set forth in claim 14, wherein said inner liner, said outer shell, and said ring are constructed from a corrosion resistant material.

17. The water jacketed exhaust pipe as set forth in claim 14, wherein said first and second inwardly tapered sections are curved.

18. The water jacketed exhaust pipe as set forth in claim 14, wherein said first and second inwardly tapered sections are cone shaped.

19. The water jacketed exhaust pipe as set forth in claim 14, wherein at least one of said first and second inwardly tapered sections is curved.

20. The water jacketed exhaust pipe as set forth in claim 14, wherein at least one of said first and second inwardly tapered sections are cone shaped.

21. A water jacketed exhaust pipe for marine engines comprising:

an elongated inner liner forming an exhaust gas duct;
an elongated outer shell, said shell surrounding said liner about an elongate axis of said pipe, said shell further defining a tail end, said tail end defining an inwardly tapered section;

a spacer angularly disposed between said outer shell and said inner liner and separating said shell from said liner and defining a water containing volume therebetween, said spacer further defining at least one passageway thereby communicating said water containing volume with an outer volume outside said exhaust pipe;

wherein water from said water containing volume is directed toward said outer shell by said at least one

passageway, wherein said passageway is narrow enough to create a back pressure in said inner volume that thereby forcefully elects water through said passageway, and wherein said at least one passageway is sized for allowing water to flow at a predetermined velocity, and said inner liner sized for allowing exhaust gas to flow at a predetermined velocity approximately 1.5 feet per second greater than said water velocity.

22. The water jacketed exhaust pipe for marine engines as in claim 21, wherein said spacer is a ring.

23. The water jacketed exhaust pipe as set forth in claim 21, wherein at least one of said first and second inwardly tapered sections is curved.

24. The water jacketed exhaust pipe as set forth in claim 21, wherein at least one of said first and second inwardly tapered sections are cone shaped.

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EXHIBIT B